

Species Diversity, 2003, 8, 385–389

A New Species of *Asterostegus* (Echinodermata: Ophiuroidea) from the Cook Islands, South Pacific Ocean

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(Received 26 July 2000; Accepted 5 July 2003)

The euryalinid genus *Asterostegus* (Echinodermata: Ophiuroidea) has been known only from a single specimen of the type species *A. tuberculatus*, collected in South African waters. A second species, *Asterostegus maini*, is now described from the Cook Islands, South Pacific Ocean. *Asterostegus maini* differs from the type species in having tubercles more or less restricted to the outer half of the radial shields, a wider bare dorsal arm surface, often more than two tubercles on the proximal dorsolateral plates, and a single row of ventral disc plates interradially.

Key Words: Echinodermata, Ophiuroidea, Euryalidae, *Asterostegus*, new species, Cook Islands, South Pacific Ocean.

Introduction

The ophiuroid genus *Asterostegus* (Phrynophiurida: Euryalidae) was erected by Mortensen (1933) for a single specimen, collected in 382 m off southern Africa, which he named *Asterostegus tuberculatus* Mortensen, 1933. The genus and species are listed in Fell (1960), but apart from the original description the only other notes on it are in Clark and Courtman-Stock (1976). The genus is characterised by five simple arms, prominent tubercles on the radial shields and the dorsal sides of the arms, and small oral papillae as well as a group of ventral interradial plates distal to the adoral shields, the latter of which more or less projecting over the near-vertical genital slits.

The present specimen, originally reported as *Astroceras elegans* (Bell, 1917) by McKnight (1989), has now been re-examined and can be assigned to *Asterostegus* Mortensen, as a second species of the genus.

Systematics

Genus *Asterostegus* Mortensen, 1933

Diagnosis. Disc large and robust, arms unbranched, disc and arms covered by thick, naked skin. Radial shields and dorsal sides of arms with numerous prominent tubercles. Oral shields absent; distal to adoral shields represented by several smaller plates more or less projecting over near vertical genital slits. One to three subequal arm spines present.

Type species. *Asterostegus tuberculatus* Mortensen, 1933.

Remarks. This genus is close to *Astroceras* Lyman but differs in having 3–5 ventral interradial plates (usually 0 in *Astroceras*) and the transversely widened tubercles on the dorsolateral armplates.

***Asterostegus maini* sp. nov.**
(Figs 1–2)

Astroceras elegans: McKnight 1989: 25 (non Bell, 1917).

Material examined. Holotype: NIWA H-733, lodged in the collections of NIWA, Wellington. Type locality: NIWA Station U324, 10°53.0'S, 165°55.2'W to 10°52.4'S, 165°55.4'W, 417–446 m, vicinity of Pukapuka Atoll, Manihiki Plateau, Cook Islands, collected 21 April 1986.

Description. Disc diameter 22 mm, arm length at least 205 mm, arm tips missing. Disc quite rigid due to interradial plates at margins. Disc slightly inflated on dorsal surface, interradii slightly indented, margins more or less vertical. Disc and arms covered by skin. Radial shields distinct beneath skin, raised above general surface. Interradial distance between shields slightly less than that between adjacent shields, each shield widest on outer third to half, with sides parallel; inner portions of shields tapering, extending almost to disc centre and meeting. Outer part of shields with 7–15 tubercles, roughly arranged in 2 rows, quite regular on 2 shields, on others less so; tubercles varying in size, spaced apart, usually higher than wide with blunt, glassy, finely rugose tip. Row of 1–3 slightly swollen, skin-covered plates at disc margin across each interradius, these plates with few, small, scattered tubercles. Dorsal interradial areas simply skin-covered.

Genital slits set within more-or-less keyhole-shaped apertures. Ventral surface of disc skin-covered, smooth, without granules. Margins of jaw and tip of oral plate with fine, closely packed granules. Robust, pointed, flattened lower tooth at tip of jaw; 7–8 teeth in vertical series, upper tooth sometimes with truncate tip. Jaws convex on outer surface.

Adoral shields lying distal to jaw, ovoid in outline; oral shields absent; single row of 3–5 rounded interradial plates distal to each adoral shield. One median plate placed slightly proximal to rest in 2 interradii, but neither with madreporic pores, and only one set on midline.

Arms higher than wide at base, rectangular in cross-section, becoming rounded on upper surface at about mid-length but remaining higher than wide almost to tip; depressed area or groove along dorsal midline, widest at base, tapering and disappearing by one third to one half length. Dorsal surface of arm slightly depressed, smooth, broad initially, narrowing distally where arm is rounded, extending more or less to tip. Dorsolateral margin slightly raised, with distinct tubercular plate visible beneath skin. Near armbase usually 3 tubercles in transverse series on each plate, sometimes 4–5 tubercles, but if so, disposition irregular; beyond proximal quarter of arm usually 3 tubercles, less regularly arranged. Tubercles extending to near arm tip. At arm base, tubercles mainly higher than wide, blunt, glassy, and finely rugose at tip, becoming very small from beyond point where dorsal surface of arm becomes rounded, one on each plate. Lateral surfaces of arms smooth near base, but plates visible beneath skin. Plates irregular at arm base, but

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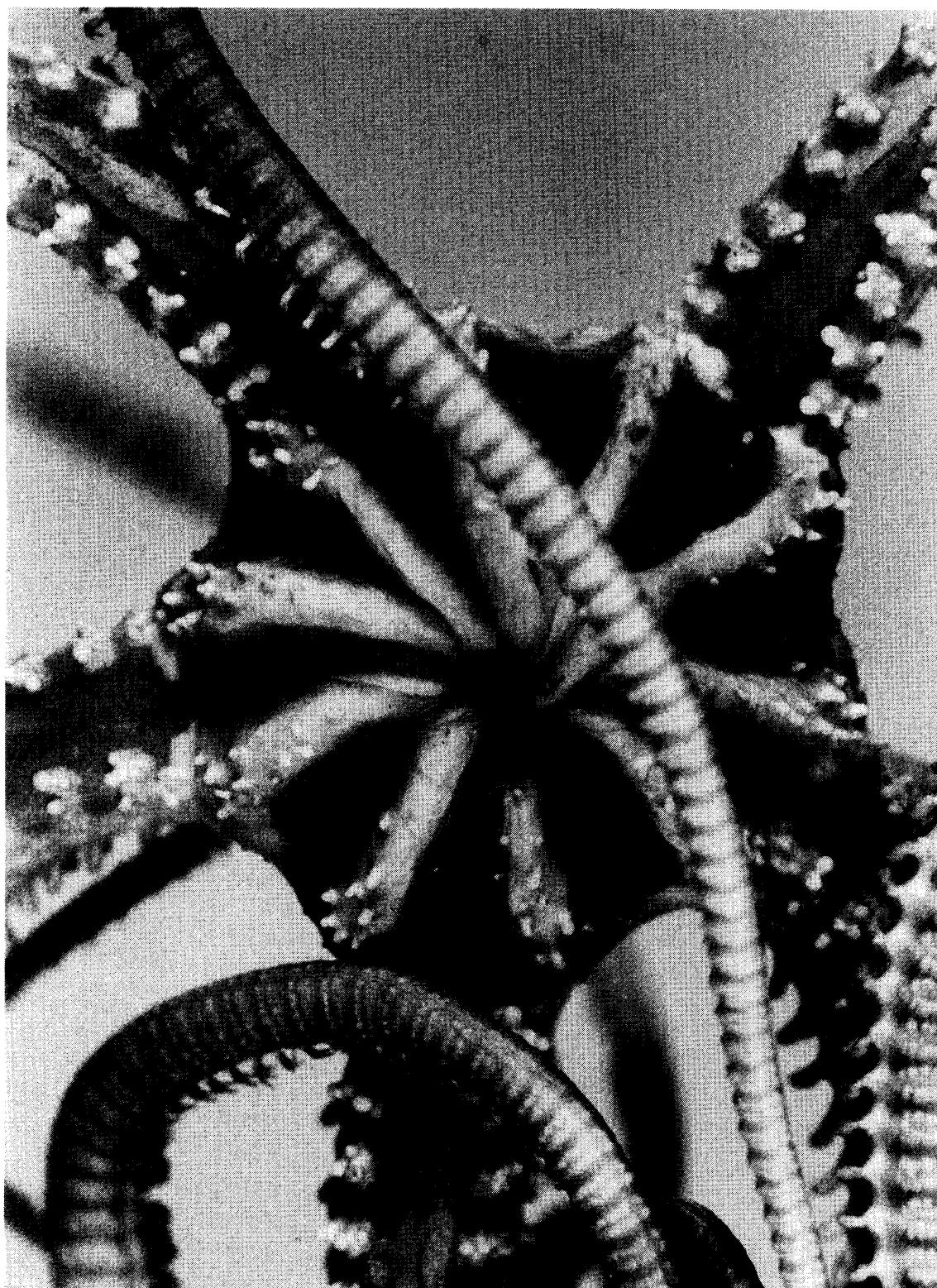


Fig. 1. *Asterostegus maini* sp. nov. Dorsal view of holotype specimen, disk diameter 22 mm.

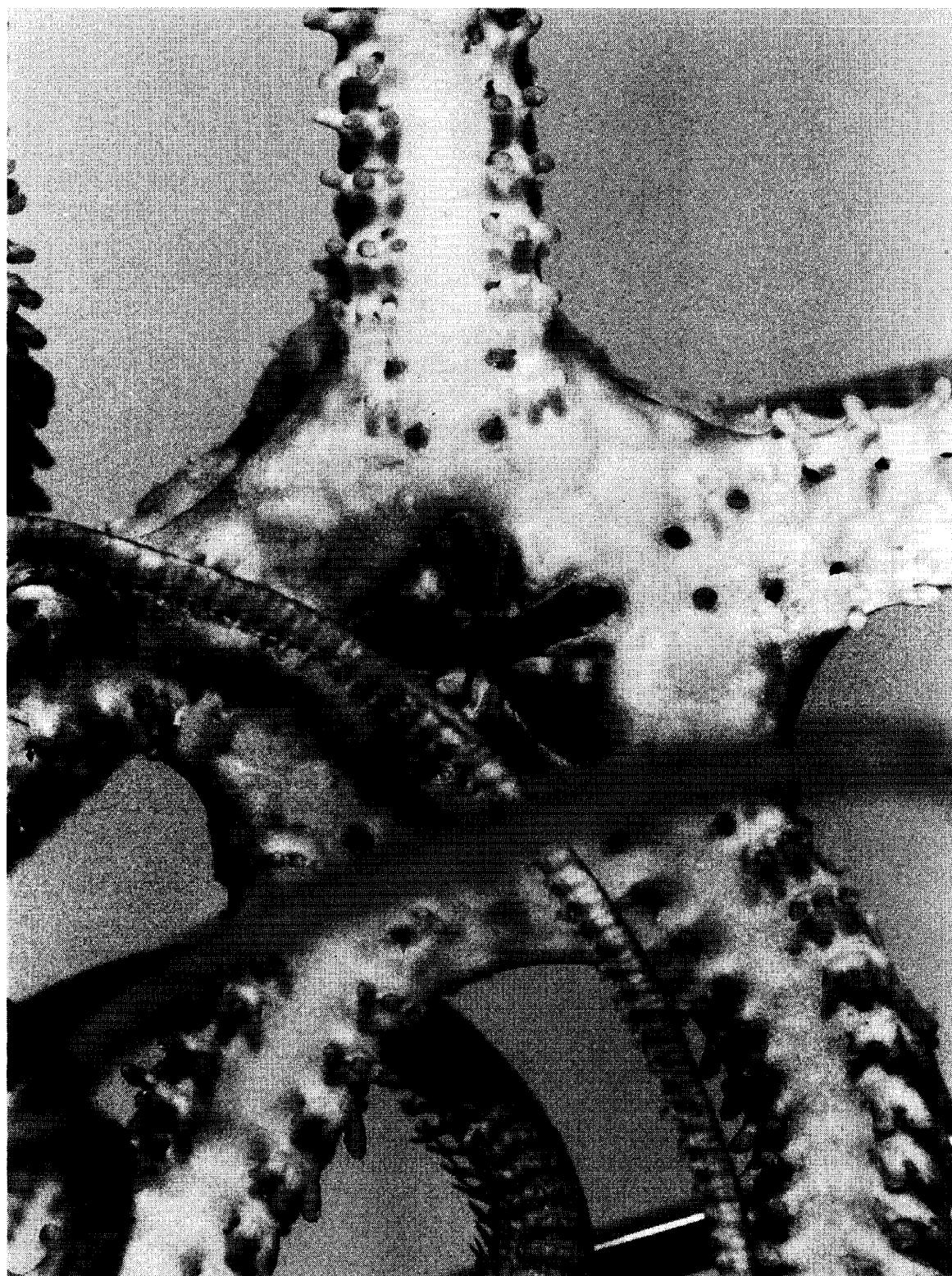


Fig. 2. *Asterostegus maini* sp. nov. Same specimen as in Fig. 1, ventral view.

soon becoming aligned in 2 vertical rows, converging downwards. Distal plates much smaller, but relatively more conspicuous because of being slightly swollen. Very small granules present on skin between these distal plate columns.

Ventral arm surface smooth, skin-covered; first tentacle-pore lacking arm-spines; second usually with 2 spines (1 or 3 spines observed once each), placed a little proximal to tentacle-pore, next 4–5 arm segments with 3 spines each, thereafter almost always 2, rarely 3, spines placed close to tentacle-pore.

Proximal arm-spines usually transversely flattened, distal third to half slightly expanded and covered with dense prickles. Outer spine or spines slightly longer than inner ones, equal to length of corresponding arm segment or slightly shorter. From about proximal third, arm-spines becoming slightly longer (to just over length of segment), and lateral plates also becoming longer. Character of spines and plates changing abruptly from about mid-arm or slightly beyond: lateral plate elongate, just longer than arm segment; arm-spines initially short, tapering and sharply pointed, then shaped as small, delicate hooks, with 1–2 teeth below terminal tooth; inner spine transforming first, usually slightly shorter than others; plate longer than segment, spines about one third length of segment.

Colour. In ethanol, areas between radial shields as well as dorsal surfaces of arms light brown, rest of body creamy-white.

Distribution. Only known from type locality, near Pukapuka Atoll, Cook Islands, 427–446 m deep.

Remarks. *Asterostegus tuberculatus* has the radial shields tuberculate throughout their length; usually two tubercles to each dorsolateral plate, the plates appearing to almost meet on the dorsal midline of the arms; and two rows of ventral interradial plates. *Asterostegus maini*, new species, differs in having the radial shields tuberculate in their distal half only; often more than two tubercles on the proximal dorsolateral plates, the two rows of these plates being clearly separated dorsally; and a single row of ventral interradial plates. The type specimen of *A. tuberculatus* has a disc diameter of 23 mm, in this new species it is 22 mm, so size does not account for the differences. Both species are known only from a single specimen, and variation within either remains unknown.

Etymology. Named for Mr. W. Main, who collected this species and many others in the NIWA collections.

References

Clark, A. M. and Courtman-Stock, J. 1976. *The Echinoderms of Southern Africa*. Trustees of the British Museum (Natural History), London, 277 pp.

Fell, H. B. 1960. Synoptic keys to the genera of Ophiuroidea. Zoology Publications from Victoria University of Wellington 26: 1–44.

McKnight, D. G. 1989. Some echinoderm records from the tropical south-western Pacific Ocean. Department of Scientific and Industrial Research, Division of Marine and Freshwater Science (Wellington) Report 3: 19–30.

Mortensen, T. 1933. Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16. LXV. Echinoderms of South Africa (Asteroidea and Ophiuroidea). Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i København 93: 215–400, pls 8–14.